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मानक

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IS 417-1 (2003): Footballs, Volleyballs, Basketballs, Netballs, Throwballs and Water-Polo Balls, Part 1: Footballs [PCD 22: Sports Goods]



“ज्ञान से एक नये भारत का निर्माण”

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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
फुटबालों, वॉलीबालों, बास्केटबालों, नेटबालों,
थ्रोबालों और वाटर-पोलो बालों—विशिष्टि

भाग 1 फुटबाल
(चौथा पुनरीक्षण)

Indian Standard
FOOTBALLS, VOLLEYBALLS, BASKETBALLS,
NETBALLS, THROWBALLS AND
WATER-POLO BALLS—SPECIFICATION

PART 1 FOOTBALLS
(*Fourth Revision*)

ICS 685.633.22

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Sports Goods Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was first published in 1953 as a tentative standard and was subsequently revised in 1965, 1969 and 1974 covering the requirements for stitched leather footballs only. This revision has been necessitated with a view to align the standard in line with test criteria being followed by International Football Federation, namely, FIFA. Keeping pace with international practices, only performance requirements have been incorporated in this revision irrespective of the material of the footballs. Besides, requirements for indoor footballs have also been covered in this revision. Three grades of the footballs have been prescribed for outdoor footballs and two grades have been prescribed for indoor football category.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

FOOTBALLS, VOLLEYBALLS, BASKETBALLS, NETBALLS, THROWBALLS AND WATER-POLO BALLS—SPECIFICATION

PART 1 FOOTBALLS*(Fourth Revision)***1 SCOPE**

This standard covers the requirements, methods of sampling and tests for footballs.

2 TYPES

There are two types of footballs, namely, outdoor footballs and indoor footballs.

3 REQUIREMENTS**3.1 Material**

Footballs may be made of stitched leather, stitched synthetic material or moulded synthetic material.

3.2 Finish

Footballs shall have smooth surface finish.

3.3 Shape, Dimensions and Mass

Shape, dimensions and mass for various grades shall be as given in Tables 1 and 2.

3.4 Footballs shall also meet the requirement given in Tables 1 and 2 for outdoor and indoor footballs respectively.

4 PACKING AND MARKING**4.1 Packing**

Each ball shall first be wrapped in a polyethylene cover

and then packed together with other balls similarly wrapped according to the instructions of the purchaser.

4.2 Marking

4.2.1 Each ball shall be marked with the following:

- a) Name of the material;
- b) Indication of the source of manufacture, that is name of the manufacturer, initials or trade-mark;
- c) Month and year of manufacture; and
- d) Batch number/Code number.

4.2.2 BIS Certification Marking

The footballs may also be marked with the Standard Mark.

4.2.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5 SAMPLING AND CRITERIA FOR CONFORMITY

Sampling of footballs shall be drawn and the criteria for conformity determined as described in Annex A.

Table 1 Requirements for Outdoor Football
(Clauses 3.3 and 3.4)

SI No.	Characteristics	Requirements			Test Conditions
		Grade 1 (Size 5)	Grade 2 (Size 5)	Grade 3 (Size 4)	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Mass, g	420-445	410-450	350-390	Ball pressure 0.8 bar
ii)	Circumference, cm	68.5-69.5	68.0-70.0	63.5-66.0	Ball pressure 0.8 bar
iii)	Sphericity, percent, <i>Max</i>	1.5	2	2	Ball pressure 0.8 bar (deviation of the measured mean value)
iv)	Loss of pressure, percent, <i>Max</i>	20	25	25	Ball pressure 1.0 bar at the start of the test maximum loss of air after 3 days (72 h)
v)	Water absorption test				
	a) Average water uptake of the initial mass of the tested balls, percent, <i>Max</i>	10	15	15	Ball pressure 0.8 bar tank filled with water 2 cm height 250 compressions with constant ball rotation, ball deformation maximum 25 percent.
	b) Water uptake per ball not to exceed, percent, <i>Max</i>	15	20	20	
vi)	a) Rebound at 20°C, cm	120-165	115-165	110-160	Ball pressure 0.8 bar each ball being dropped 10 times (on to different panels) from a height of 2 m onto a steel plate
	b) Rebound, at 5°C, cm, <i>Min</i>	120	110	110	
	c) Maximum difference, in cm, between lowest and highest rebound per ball tested	10	10	10	
vii)	Shape and size retention test including change of pressure	Measured after 2 000 kicks seams and air-valve undamaged	—	—	Ball pressure 0.8 shooting onto a steel panel at approximately 50 km/h
	a) Increase in circumference, in cm, <i>Max</i>	1.5	—	—	Shooting length 250 cm
	b) Deviation on sphericity, in cm, <i>Max</i>	1.5	—	—	
	c) Change of pressure, in bar, <i>Max</i>	0.1	—	—	

NOTES

1 Tests are conducted at room temperature (approximately 20°C) and 65 percent humidity.

2 Rebound measured at 20°C and at 5°C.

Table 2 Requirements for Indoor Football
(Clauses 3.3 and 3.4)

Sl No.	Characteristics	Requirements		Test Conditions
		Grade 1 (Size 5)	Grade 2 (Size 4)	
(1)	(2)	(3)	(4)	(5)
i)	Mass, g	410-430	400-440	Ball pressure 0.6 bar
ii)	Circumference, in cm	62.5-63.5	62.0-64.0	Ball pressure 0.6 bar
iii)	Sphericity, percent, <i>Max</i>	1.5	2	Ball pressure 0.6 bar
iv)	Loss of pressure, percent, <i>Max</i>	20	25	Ball pressure 0.6 bar at the start of the test maximum loss of air after 3 days (72 h)
v)	Rebound, in cm	55-65	50-65	Ball pressure 0.6 bar each ball being from a height of 2 m onto a wooden plate
vi)	Balance, <i>Max</i>	5°	7.5°	Ball pressure 0.6 bar ball being rolled down an inclined slope onto a table with predetermined rolling direction/angle deviation of rolling direction is measured
vii)	Shape and size retention test including change of pressure	Measured after 2 000 kicks seams and air-valve undamaged	—	Ball pressure 0.6 bar shooting onto a steel panel at approximately 50 km/h
	a) Increase in circumference, in cm, <i>Max</i>	1.0]	Shooting length : 250 cm
	b) Deviation on sphericity, in cm, <i>Max</i>	1.5		
	c) Change of pressure, in bar, <i>Max</i>	0.1		

NOTE — Tests are conducted at room temperature (approximately 20°C) and 65 percent humidity.

ANNEX A
(Clause 5)
SAMPLING OF FOOTBALLS

A-1 SCALE OF SAMPLING

A-1.1 Lot

In any consignment, all the balls of one type, manufactured from same raw materials shall be grouped together to constitute a lot.

A-1.2 For ascertaining the conformity of the lot to the requirements of this standard, tests shall be carried out for each lot separately. The number of balls to be sampled from a lot shall be in accordance with Table 3.

A-1.3 The balls shall be selected at random from the lot.

A-2 CRITERIA FOR CONFORMITY

A-2.1 Shape, Dimensions, Mass and Finish

The sample balls selected as per col 3 of Table 3 shall

be tested for shape, dimensions and mass and examined for finish. Any balls failing in one or more of the requirements shall be termed as defective. The lot shall be accepted under this head if the number of defective balls in sample does not exceed the acceptance number given in col 4 of Table 3.

A-2.2 Prolonged Inflation Test and Loss of Pressure, Water Absorption, Rebound, Shape and Size Retention Test Including Loss of Pressure

The sample size given in col 5 of Table 3 shall be subjected to prolonged inflation test and loss of pressure, water absorption, rebound and shape and size retention test including loss of pressure. Any ball failing in one or more of the requirements shall be termed as defective. The lot shall be accepted under this head if the number of defective balls in sample does not exceed the acceptance number given in col 6 of Table 3.

Table 3 Scale of Sampling and Acceptance Number
(Clauses A-1.2, A-2.1 and A-2.2)

Sl No.	Lot Size	For Shape, Dimension, Mass and Visual Examination		For Prolonged Inflation Test and Loss of Pressure, Water Absorption, Rebound Test and Shape and Size Retention Test Including Loss of Pressure	
		Sample Size	Acceptance Number	Sample Size	Acceptance Number
(1)	(2)	(3)	(4)	(5)	(6)
i)	Up to 500	13	1	5	0
ii)	501 to 1 000	20	2	8	0
iii)	1 001 to 3 000	32	3	13	0
iv)	3 001 to 5 000	50	5	20	1
v)	5 001 and above	80	7	32	2

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Amendments Issued Since Publication

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